

Date: Tuesday, 4/18/2006 10:06:34 AM
 User: Kim Johnston

Process Sheet

Customer	CU-DAR001 Dart Helicopters Services	Drawing Name	: SUPPORT (412 AFT)			
Job Number	26683	Part Number	: D28961			
Estimate Number	11060	Drawing Number	: D2896 REV A3 A4 06.04.18			
P.O. Number	N/A	Project Number	: N/A			
This Issue	4/18/2006	S.O. No.	: N/A			
Prsht Rev.	NC	Type	: MACHINED PARTS			
First Issue	N/A	Material	: N/A			
Previous Run	N/A	Due Date	: 5/4/2006			
Written By	<u>See Comments Below</u>					Qty: 8 Um: Each
Checked & Approved By	<u>06.04.18</u>					
Comment	: Est: B 02.11.26 Reformat; Added P/O; Added mask hole KJ					

Additional Product

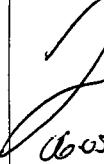
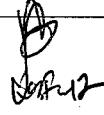
Job Number:



Seq. #:	Machine Or Operation:	Description :
1.0	PG	PURCHASING  Comment: PURCHASING Issue P/O: <u>1071</u> Description: D6104-011 Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104 Material release note required. Blank size makes (2) D2896-1 <u>C 06/04/25</u> (8)
2.0	D6104011	17-4 SS Roundbar 6.50"OD  Comment: Qty.: 1.0000 Each(s)/Unit Total : 8.0000 Each(s) Support
3.0	PACKAGING 1	PACKAGING RESOURCE #1  Comment: PACKAGING RESOURCE #1 Recieve & Inspect for Transit Damage Ensure Material Release Note is attached <u>P 0 6/5/3</u> (8)
4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE  Comment: MORI SEIKI CNC LATHE LARGE Turn blank for Haas as per Folio FA167 <u>M8/3G 06/05/19</u> 7 PTO
5.0	QC1	INSPECT ALL DIM TO DIM SHEET  Comment: INSPECT ALL DIM TO DIM SHEET <u>BC 06.05.25</u> 7

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

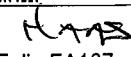
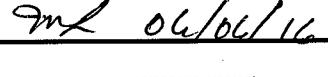
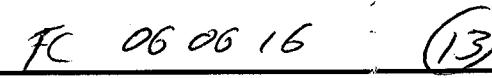
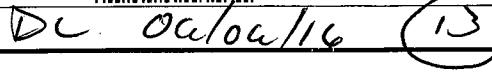
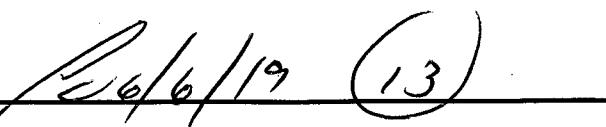
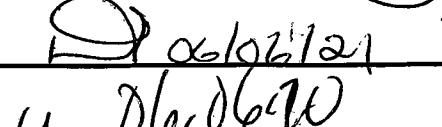
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA:  Date: 06/06/12
 QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
06/05/12	1	Turning operation, tool moved in holder, causing the Ø of the part to be undersize	 J. Joseph	Program changed - Scapp: destroy - No replace - use good side of scapp part for set-up.	BS 06.05.25	 J. Joseph	 J. Joseph	 J. Joseph
06/06/12	6	the speed and the feed too fast was , the drill do broke inside on Ø.625	 J. Joseph	change speed and feed Part scapp. destroy.	EP 06/06/13	 J. Joseph	 J. Joseph	 J. Joseph

NOTE: Date & initial all entries

Date: Tuesday, 4/18/2006 10:06:34 AM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services		Drawing Name: SUPPORT (412 AFT)
Job Number: 26683		Part Number: D28961
Job Number: 		
Seq. #:	Machine Or Operation:	Description :
6.0	BAND SAW 	BAND SAW 
Comment: BAND SAW  Machine as per Folio FA167 Tumble & Deburr		
7.0	QC1 	INSPECT ALL DIM TO DIM SHEET 
Comment: INSPECT ALL DIM TO DIM SHEET 		
8.0	QC8 	SECOND CHECK 
Comment: SECOND CHECK 		
9.0	HAND FINISHING1 	HAND FINISHING RESOURCE #1 
Comment: HAND FINISHING RESOURCE #1 Mask Ø0.625" hole prior to paint		
10.0	POWDER COATING 	POWDER COATING 
Comment: POWDER COATING Powder Coat White Gloss (Ref: 4.3.5.2) as per QSI 005 4.3 		
11.0	QC3 	INSPECT POWDER COAT/CHEMICAL CONVERSION 
Comment: INSPECT POWDER COAT 		
12.0	PACKAGING 1 	PACKAGING RESOURCE #1 
Comment: PACKAGING RESOURCE #1 Identify and Stock Location: ST 374 		
13.0	DC 	DOCUMENT CONTROL 
Comment: DOCUMENT CONTROL Inspection Level 21 		
Job Completion 		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
06/05/19	1						

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
06/05/19	1	<i>On first operation of tooling tool moved, causing the Ø of the part to be too small</i>						

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	26683
Description: Support		Part Number:	D2896-1
Inspection Dwg: D2896 Rev. A4		Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2896 Rev A4/DSK080 Rev A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions				By	Date
				1	2	3	4		
Lathe Section									
A	3.480	3.485		3.484	3.482	3.483	3.482	MS	06/05/24
B	3.990	4.010		3.999	3.997	3.997	3.997		
C	3.825	3.845		3.833	3.835	3.835	3.836		
D	0.718	0.738		.726	.725	.726	.726		
E	0.090	0.110		.106	.104	.104	.104		
F	3.705	3.725		3.714	3.718	3.717	3.719		
G	1.360	1.380		1.366	1.367	1.368	1.368		
H	1.250	1.260		1.260	1.259	1.260	1.260		
I	6.490	6.510		6.492	6.493	6.496	6.495		
J	0.022	0.042		.032	.032	.032	.032		
K	0.240	0.260		.250	.250	.250	.250		
L	0.107	0.127		.116	.118	.117	.117		
M									
HAAS Section									
AA	2.152	2.172		Can not measure					
AB	2.340	2.360		2.355	2.352	2.359	2.357		
AC	3.550	3.560		3.553	3.555	3.554	3.556		
AD	3.770	3.790		3.776	3.772	3.777	3.775		
AE	0.065 x 0.315	0.085 x 0.335		0.072 x 0.333	0.073 x 0.332	0.073 x 0.330	0.073 x 0.333		
AF	1.42	1.48		1.448	1.457	1.458	1.449		
AG	0.833	0.853		0.850	0.849	0.848	0.842		
AH	0.240	0.260		0.250	0.250	0.250	0.250		
AI	0.261	0.266	DT8707	0.261	0.265	0.261	0.265		
AJ	0.189	0.194	DT8706	0.186	0.189	0.188	0.188		
AK	1.990	2.010		2.000	1.997	1.995	1.993		
AL	0.625	0.630	DT8709	0.625	0.626	0.625	0.626		
AM	101.75	105.75	DT8697	—	—	—	—		
AN	0.053	0.073		0.054	0.063	0.063	0.063		
AO	0.927	0.947		0.947	0.947	0.943	0.945		
AP									
AQ									
Accept/Reject									

Measured by:	<i>SP/</i>	Audited by:	<i>TSG (Lathe)</i>
Date:	<i>06/06/14</i>	Date:	<i>06.05.25</i>

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	04.05.27	Dimension AE changed	KJ/RF	#

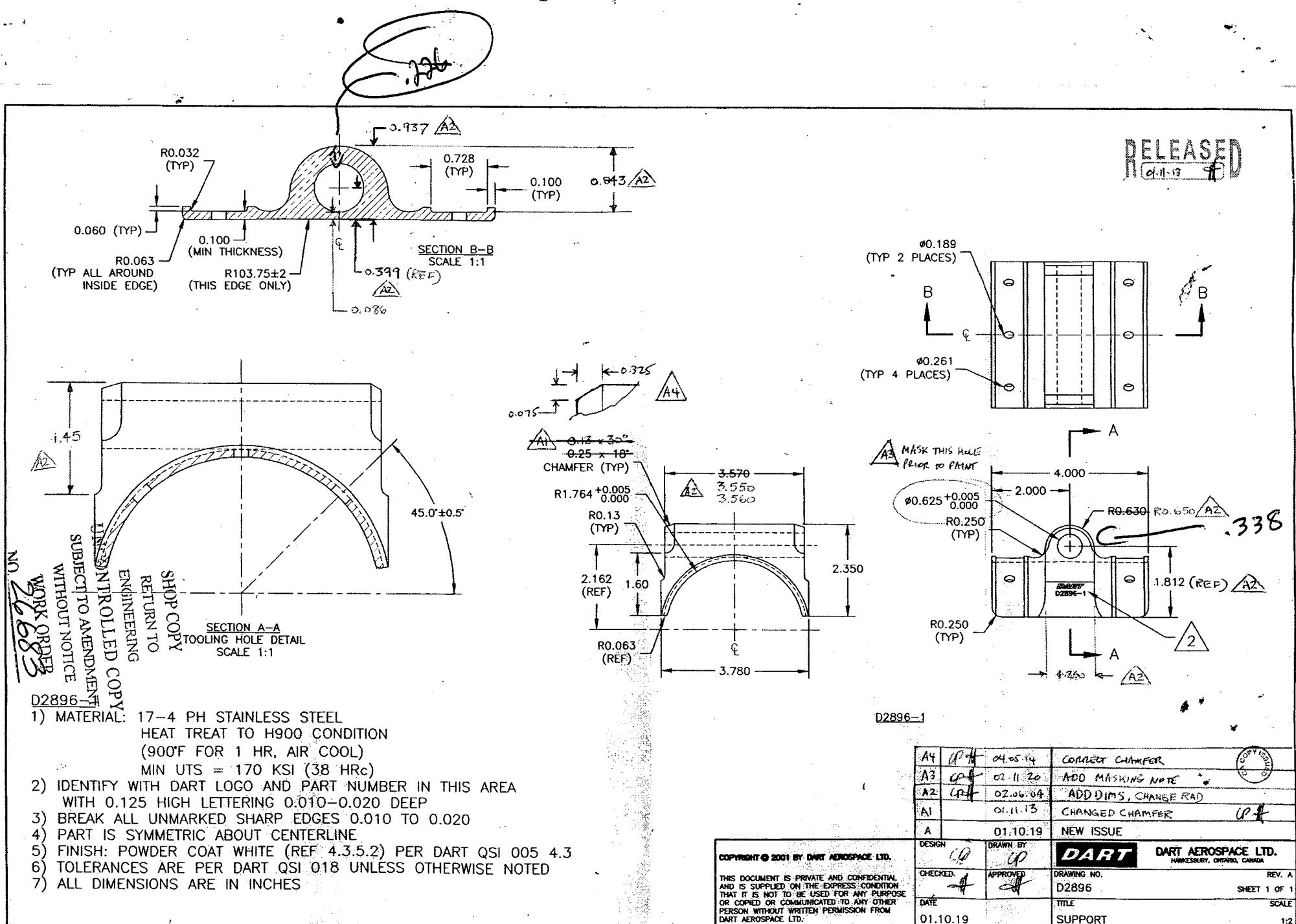
DART AEROSPACE LTD			Work Order:	26683
Description: Support			Part Number:	D2896-1
Inspection Dwg: D2896 Rev. A4			Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2896 Rev A4/DSK080 Rev A and record below:

			Recorded Actual Dimensions				
Dim	Min	Max	5	6	7	By	Date
Lathe Section							
A	3.480	3.485	3.483	3.485	3.484		M8 06/05/24
B	3.990	4.010	3.999	3.997	4.000		
C	3.825	3.845	3.839	3.834	3.835		
D	0.718	0.738	0.726	0.725	0.730		
E	0.090	0.110	0.104	0.104	0.100		
F	3.705	3.725	3.719	3.715	3.715		
G	1.360	1.380	1.369	1.368	1.370		
H	1.250	1.260	1.259	1.260	1.258		
I	6.490	6.510	6.497	6.496	6.497		
J	0.022	0.042	0.032	0.032	0.032		
K	0.240	0.260	0.250	0.250	0.250		
L	0.107	0.127	0.119	0.116	0.117		
M							
HAAS Section							
AA	2.152	2.172	2.14	2.14	2.14		
AB	2.340	2.360	2.359	2.354	2.358		
AC	3.550	3.560	3.556	3.557	3.557		
AD	3.770	3.790	3.776	3.779	3.771		
AE	0.065 x 0.315	0.085 x 0.335	0.07713	0.077135	0.0771335		
AF	1.42	1.48	1.451	1.451	1.448		
AG	0.833	0.853	0.847	0.847	0.848		
AH	0.240	0.260	0.250	0.250	0.250		
AI	0.261	0.266	0.264	0.263	0.263		
AJ	0.189	0.194	0.182	0.189	0.189		
AK	1.990	2.010	1.995	1.991	1.996		
AL	0.625	0.630	0.625	0.626	0.626		
AM	101.75	105.75					
AN	0.053	0.073	0.063	0.063	0.063		
AO	0.927	0.947	0.946	0.944	0.944		
AP							
AQ							
Accept/Reject							

Measured by:	Er / S.G	Audited by:	TG 06.05.25 (Lathe)
Date:	06/06/15	Date:	

Rev	Date	Change	Revised by	Approved
A	02.12.13	New Issue	KJ/RF	
B	04.05.27	Dimension AE changed	KJ/RF	#



2/625
6
35
2
50
40
10

1.679
3/25
1.9915

CUSTOMER 96294	SHIP DATE 05/02/06 SHP	GROSS WEIGHT 333	QUOTE 30-161786-2	OF 2 TEST RESULTS	PACKING LIST		
			ORDER DATE 04/25/06 ORD		DELIVERY DATE 05/02/06 DEL	SHIP BRANCH 30 (04)	SELL BRANCH 30-TOR
BILL TO: DART AEROSPACE		WORK ORDER **	6905 KENDERRY GATE, MISSISSAUGA ONTARIO, CANADA L5T 2Y				
DART AEROSPACE 1270 ABERDEEN ST HAWKESBURY ON CANADA		01	Copper and Brass Sales Canada A ThyssenKrupp Materials NA company				
CUSTOMER P.O. NUMBER PO00001071		TERRITORY 01	ENTRY ID 30BXT	ThyssenKrupp			
BUYER LINDA LACELLE		INSIDE SALES BRIAN TEDESCO	CUSTOMER SIGNATURE: _____ DATE: _____				
BUYER TELEPHONE (613) 632-9577		INSIDE SALES TELEPHONE (905) 696-8100 37622	QUANTITY	ORDERED	SHIPPED		
SHIP VIA		SHIPPING STATUS	INVENTORY	309.24 LB	309.00		
INTERNAL		COMPLETE X	PARTIAL	CANCEL	WAREHOUSE		
TO CUSTOMER COMMON/FRT-CCX		FOB DEST	PACKED WITH OTHER GOODS				
BILL OF LADING		FREIGHT STATUS PPD	FINISHED GOODS LOCATION				
			WARN LABEL: 1017				
			PART DESCRIPTION: 4068837				
RD T-17-4 HFRT COND A SS BAR (ABOVE 6"), 6-1/2 (+.125 -0)		-DART AEROSPACE, CUT 4.1" (+.125, -0)					
Test Results Attn to: QA Department.							

SPECIAL INSTRUCTIONS										
"Shipping, do not place any packages or goods on top of our material."										
FULL		SCRAP	FILLED BY SC	PACKED BY			Q/A AUDIT			
CUSTOMER RECEIVING HOURS 8-3			MAX SKID WEIGHT 100	LOADING INSTRUCTIONS HAND, CRANE, FORK, DOCK			MAXIMUM BUNDLE WEIGHT 200			
BOXES 1	BARS	CASES	CUSHP	PKGS	SKIDS	BDLS	TUBES	CTNS	FLAT	COILS
INSPECTION RECORD										

TEST RESULTS -----

CERTIFICATE OF COMPLIANCE

We hereby certify that mercury or any of its compounds are not used in the processing and distribution of our products. The products we distribute are not hazardous in their received state. For MSDS sheets go to www.copperandbrass.com/msds or call 248-233-5682. We hereby certify that the material above complies with the following specifications:

ASTM-A564	AMS 5643Q	AISI 630	ROHS COMPLIANT	PC	PC	PC
TAG NO	QUANTITY UOM VENDOR VEND PO HEAT/LOT	PC	PC	PC	PC	PC
	4.00 PC VALBRUN 0CJ5160 241255	1	4	4	4	4

**VALBRUNA**

SLATER STAINLESS, INC.
2400 Taylor Street West, P.O. Box 630
Fort Wayne, Indiana, USA 46801
Phone: 260-434-2892 Fax: 260-434-2905

Product Certification Report**Report Number: 4156790**

Certified on Mar 21, 2006 Page 1 of 1

Order ID	Order Date	Commodity Code					
0600634 001	3/02/06	408883-7					
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat ID 241255	Customer ID 001155	Customer Purchase Order CJ5160		
Product Shape Rounds	Product Surface HR & Rough Turned				Customer Grade 17-4		
Length (Inches) 120.000	Min. 168.000	Max. 402800	Bill of Lading #	Weight			

Ship To | COPPER AND BRASS SALES
415 STATE PARKWAY
SCHAUMBURG, IL 60173

Sold To

VALBRUNA STAINLESS, INC.
2400 TAYLOR STREET WEST
FORT WAYNE, IN 46802

Lifts: 0073 0074 0075

AISI 630	CONDITION A	MAXX stainless
ASTM A 564-04	ASMESA 564 01 ED 2002 ADD	AMS 2303E
AMS 5643Q		

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.037	.58	.024	.025	.46	15.67	4.66	.23	3.40	.04	.28	.001	.28

HB

347

TENSILE PROPERTIES**CAPABILITY**

HB	TS (PSI)	.2%YS (PSI)	%EL(2")	%RA	AGE(F)
428	199200	182100	13.6	47.8	900

MAGNETIC PARTICLE TEST

FREQ .000

SEV .00

MACRO ASTM E340/E381

MACRO

OK

OK

OK

PERCENT FERRITE

% FERRITE

AVG .5

Free of mercury and low melting alloy contamination.

MAXX stainless.

Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E1086. Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications.

Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

COPPER AND BRASS SALESSOLD TO: *C-7B*DATE: *4/26* QTY. *30000004pc*CUSTOMER PO: *PO 0000109*SHIPPER NO: *4X16225*BY: *8*

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info.

I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

Dennis Hackett

**VALBRUNA**

SLATER STAINLESS, INC.
2400 Taylor Street West, P.O. Box 630
Fort Wayne, Indiana, USA 46801
Phone: 260-434-2892 Fax: 260-434-2905

Product Certification Report**Report Number: 4111010**

Certified on Oct 07, 2005 Page 1 of 1

Order I.D.	Order Date	Commodity Code					
0501321 001	6/29/05	408883-7					
Dim 1 6.5000	Dim 2 .0000	Dim 3 .0000	Heat I.D. 416445	Customer I.D. 001155	Customer Purchase Order CE4037	CG0873	
Product Shape Rounds	Product Surface HR & Rough Turned				Customer Grade 630		
Length (Inches) 120.000 Min.	168.000 Max.		Bill of Lading # 401955	Weight			

Ship To | COPPER AND BRASS SALES
415 STATE PARKWAY
SCHAUMBURG, IL 60173

Sold To | VALBRUNA CORP.
31 IRON HORSE ROAD
OAKLAND, NJ 07436

Lifts: 0091 0092 0093 0094 0095

AISI 630	CONDITION A	MAXX stainless
ASTMA 564-04	ASMESA 564 01 ED 2002 ADD	AMS 2303E
AMS 5643Q		

CHEMICAL ANALYSIS

C	Mn	P	S	Si	Cr	Ni	Mo	Cu	N	Cb	Ta	Cb+Ta
.045	.61	.025	.023	.46	15.50	4.64	.21	3.40	.04	.32	.001	.32

HB

352

ENSILE PROPERTIES**CAPABILITY**

HB	TS (PSI)	.2%YS (PSI)	%EL(2")	%RA	AGE (F)
407	196900	171000	17.4	49.0	900

MAGNETIC PARTICLE TEST

FREQ	SEV
AVG	.03

MACRO ASTM E340/E381

MACRO

OK

OK

OK

PERCENT FERRITE

% FERRITE

AVG .5

Free of mercury and low melting alloy contamination.

MAXX stainless.

Chemical testing performed to one or several of the following ASTM methods: E415, E572, E1019, E1085, E1086
Material melted in Italy, manufactured in the United States.

Material conforms to listed specifications.

Quality system is compliant with ISO 9001:2000. Produced in accordance with EN 10204 3.1B.

COPPER AND BRASS SALES

SOLD TO: 4126

DATE: 4/26 QTY. 40

CUSTOMER PO: PO 0000109

SHIPPER NO: 4X6225

BY: 8

Results relate only to the items tested. Certification shall not be reproduced except in full, without written approval of Valbruna Stainless Inc. The recording of false, fictitious, or fraudulent statements on this document may be punished as a felony under federal statutes, including Federal law, Title 18, Chapter 47. Consult material safety data sheet (MSDS) for hazard info. I hereby certify that the reported figures are correct as contained in the records of the corporation.

Manager Laboratory Services

Dennis Hackett

COPPER AND BRASS SALES

MATERIAL TYPE STAINLESS STEEL

AISI SERIES
200 300 400
AND
PRECIPIT HARDENING GRADES

"WARNING"

INHALATION OF FUMES, FRESHLY GENERATED BY THE WELDING OF STAINLESS STEEL CONTAINING ONE OR MORE OF THE FOLLOWING INGREDIENTS, ZINC, MAGNESIUM OR COPPER, ARE KNOWN TO CAUSE METAL FUME FEVER. INHALATION OF DUST OR FUME FROM STAINLESS STEEL CONTAINING ONE OR MORE OF THE FOLLOWING INGREDIENTS, ALUMINUM, IRON, MANGANESE, SELENIUM, OR TIN, HAS ALSO BEEN REPORTED TO CAUSE METAL FUME FEVER AND MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT AND/OR AGGRAVATE PRE-EXISTING CONDITIONS. TARGET ORGAN IS PRIMARILY THE LUNG.

THIS PRODUCT CONTAINS CHROMIUM. EXPOSURE TO CHROMIUM DUST OR FUME MAY CAUSE METAL FUME FEVER WITH FLU-LIKE SYMPTOMS AND KIDNEY AND LIVER DAMAGE. UNDER HIGH TEMPERATURES, HEXAVALENT CHROMIUM MAY BE PRODUCED, IF IN THE INSOLUBLE FORM, IT IS A CONFIRMED HUMAN CARCINOGEN. THIS PRODUCT MAY ALSO CONTAIN NICKEL AND COBALT. INHALATION OF NICKEL OR COBALT DUST OR FUME MAY RESULT IN INFLAMMATION OF THE RESPIRATORY TRACT. NICKEL AND COBALT HAVE BEEN IDENTIFIED AS POTENTIAL HUMAN CARCINOGENS.

IF COATED WITH OIL, MAY CAUSE SKIN IRRITATION/DERMATITIS BY CONTACT. WELDING FUME IS LISTED AS A POSSIBLE CARCINOGENIC TO HUMANS.

READ THE STAINLESS STEEL MATERIAL SAFETY DATA SHEET (MSDS) ON FILE WITH YOUR EMPLOYER BEFORE WORKING WITH THIS MATERIAL

- * If processing or recycling produces particulate, use exhaust ventilation or other controls designed to prevent exposure to workers. Examples of such activities include melting, welding, grinding, abrasive sawing, sanding and polishing. Any activity which abrades the surface of this material can generate airborne particulate. Use respiratory protection (P100, quantitative fit testing required) if exposures exceed the permissible limits.
- * The Occupational Safety and Health Administration (OSHA) have set mandatory limits on occupational exposures.
- * Stainless Steel, in solid form and as contained in finished products presents no special health risk.
- * Sold for manufacturing purposes only. This product can be recycled; contact your sales representative.

The Occupational Safety and Health Administration require employers to provide training in the proper use of this product.

For additional information, call or write to Copper and Brass Sales, 22355 West Eleven Mile Road, Southfield, MI 48034, telephone 248-233-5600, or visit our web site @ www.copperandbrass.com.

